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ABSTRACT

Sentence combining (SC) has proved to be valuable in increasing the syntactic maturity of students. However, teachers have felt uncomfortable with the rhetorical nature of SC. Little research has been done on the relation of cognitive processes and SC. SC might be more useful if account is taken of the fact that syntax is an abode for cognitive structures, or that syntax might function in precise ways as a cognitive organizer, or that each syntactic structure might host a certain range of cognitive structures. A first step towards bringing SC pedagogy into focus with cognitive processes would be research that compares how writers at different age levels match particular syntactic structures with particular cognitive structures. (Included are illustrations and discussions of a single syntactic structure hosting several cognitive structures, a single cognitive structure wedded to different syntactic structures, and sentences with identical syntactic structures but with different cognitive density.) (TJ)

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SENTENCE MANIPULATION AND COGNITIVE OPERATIONS

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A growing body of research in sentence combining (Burrell, et al., 1974; Combs, 1976; Fischer, 1973; Green, 1972; Hunt and O'Donnell, 1970; Maimon and Nodine, 1978; Mellon, 1969; Miller and Ney, 1968; Morenberg, et al., 1978; O'Hare, 1973; Pederson, 1977; Perron, 1974; Stewart, 1978; Vitale, et al., 1971) within the last decade has established the value of sentence manipulation techniques in increasing the syntactic maturity of students from elementary grades to the college level. One researcher (Combs, 1978) claims that the development of sentence combining research has evidenced an orderliness, continuity, and applicability to classroom practice uncommon in the literature of English language arts.

The research indicates that sentence combining exercises also have a positive effect on the broader, non-syntactic elements of student writing, like ideas, diction, and usage (Morenberg, 1978; O'Hare, 1973; Combs, 1978). Even so, there is widespread discomfort with the narrow "arhetorical" nature of SC pedagogy. SC in its present form is syntax drill. True, it bypasses the teaching of abstract definitions and rules, which has consistently proven ineffective for improvement of student writing (Mellon, 1969; Sherwin, 1969). But many researchers and teachers are uneasy about the fact that SC exercises are organized around syntactic structures isolated from the composing process, and that the unit of pedagogy is the sentence.

According to Odell (1977) "Syntax provides only a few cues to intellectual processes, and even those (e.g., . . . linking verb/predicate nominative cues to classification) need not be associated with lengthy and complex sentences." (p. 128). San Jose (1978) notes that "Development in writing is part of language

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development, which is patently extremely complex, a constant interplay of situation and personal relationships and purpose, compounded of both inner understanding and verbal symbol. . .. Within all this, syntax is only one small element." (p.92)

King (1978) points to a trend towards exploration of semantic relationships in text units larger than the sentence among influencial writers like Chafe and Holliday. Charles Cooper, Frank D'Angelo, and William Strong (personal communication) have also noted a decided shift in focus from sentence-level, syntactically-based research to larger units of discourse analyzed in terms of the intellectual processes used by students in composing texts.

The move towards an understanding of the cognitive processes involved in composition is importnat, and not surprising, since the transformational grammar from which SC was originally derived was never intended to serve as a psychological model. What is surprising is the submerged assumption (sometimes explicit, as in the Odell quote) that the study of intellectual processes within sentence production is unlikely to yield helpful data, and that the path to progress lies in analysis of the cognitive motion of larger discourse units. Since SC research suggests that simple syntactic drill produces unaccountable advances in non-syntactic areas like quality of diction and ideas, it seems that we should be all the more interested in getting precise information about the mix of cognitive and syntactic elements that operate within sentences.

Stotsky (1975) states the problem tantalizingly: "The practice of playing mentally and operationally with syntactic structures leads to a kind of automatization of syntactic skills such that mental energy is freed . . . to concentrate on greater elaboration of intention and meaning." (p. 55)

The "freeing of mental energy" through syntactic elaboration of ideas sounds a bit mystical, but the processes might be anatomized if we ask ourselves questions like these about the relationship of syntactic structures to cognitive operations:

> Do certain cognitive operations (e.g., classification/specification, causality, comparison/contrast, conditionality) function within <u>particular syntactic structures</u> in students' and adults' speech and writing? Does a given syntactic structure (e.g., an appositive or adverb clause) have a definable <u>range</u> of cognitive structures that function within it? If so, what is the <u>frequency</u> with which mature speakers and writers place a particular cognitive structure within a given syntactic setting? What is the relationship of the <u>cognitive content</u> of a sentence to a student's ability to effect various embeddings?

Questions similar to these have been raised before, but to my knowledge not researched systematically. Deese (1973) speaks of coding semantic structures onto linguistic structures. Odell (1977), despite his rejection of the sentence as an appropriate unit for analysis of cognitive processes, recognizes

with Deese the possibility of identifying a finite number of cognitive categories that are related to linguistic cues. Posner (1978) lists sentences with similar syntactic structures, including identical connectives, but with obviously different underlying cognitive structures. Bandler and Grinder (1975), writing for psychiatrists, have created an index of syntactic environments in which natural language presuppositions appear. Pitkin (1969, 1977a, 1977b, 1978) offers a model for analyzing discourse in terms of logical relationships both within sentences and across sentence boundaries.

My own continued interest in sentence-level research springs partly from raw curiosity about cognitive and language development, but also from problems that arose while monitoring the use of sentence manipulation materials in public schools between 1970 and 1977. I had designed some simple SC materials for use in the junior high/middle schools (Suhor, 1972); and the O'Hare Sentencecraft text (O'Hare, 1975) had been commercially published, mainly for senior high and college markets. A middle school teacher using O'Hare's text with her gifted classes reported that the students loved the SC exercises but seemed interested in solving the syntactic puzzles only in order to get to the ideas in the sentences. Since O'Hare's text includes sentences from works by well-known authors, the cognitive density of the sentences was formidable. At the same time, senior high teachers at inner city schools reported that their students were stymied by the opaqueness of the sentences in O'Hare (as well as his transformationally-based cue system). The teachers found that they could successfully use the syntactic "skeletons" provided by O'Hare as the basis for their own sentence exercises that included less sophisticated intellectual content. They also found that the models provided in my junior high materials were more usable with their students.

I began to wonder whether sentence combining materials wouldn't be more helpful if they took account of the fact that syntax is an abode for cognitive structures, or that syntax might function in precise ways as a cognitive organizer, or that each syntactic structure might host a certain range of cognitive structures, the range perhaps differing for writers at different age levels. Yet there seemed to be no research base for developing materials along these lines; and theorists and researchers were already looking towards analysis of larger units of discourse.

To get a better handle on this problem, I'd like to take a single syntactic structure, the appositive, and illustrate how it can be a host for five cognitive structures. Then I'll turn around and show a single cognitive structure, cause/effect relations, wedded to seven syntactic structures. Finally, I'll give two sentences that have identical syntactic structures but vastly different cognitive density.

1. The halberd, a sixteenth century weapon, was missing from the museum.

2. The halberd, a sixteenth century weapon consisting of a battleaxe attached to a spear, was missing from the museum.

3. Bradwell, a staunch Republican, voted the entire GOP ticket last November.

4. Ali, a butterfly and a bee in the ring, kept Spinks confused throughout the fight.

5. The simple ingredients, almonds and mushroom soup, made a delicious gravy for ordinary broiled chicken.

In the first sentence, the appositive functions as a classifying structure. In the second the multiple embedding constitutes a full definition. In sentence three, the appositive in a sense classifies, but the inevitable inference is that a cause/effect relationship exists between Bradwell's devotion to the Republican party and his straight GOP vote in November. (It is interesting to examine the appositive in sentence 3 in light of Odell's statement that a linking verb with predicate nominative cues to classification. This might be true of the deep structure sentence represented by the appositive, but as embedded in the sentence, the rhetorical intention is clearly to state a cause/effect relationship.) The appositive in the fourth sentence hosts an analogy, a significant departure from the others in its use of a fictive mode (Suhor, 1975). In the final sentence, the appositive performs an enumerating function, listing component parts of the subject.

In case you're wondering where I am getting all these cognitive categories from, let me assure you that I'm borrowing from everywhere, and when that fails I make them up as I go along. Various taxonomies exist (Bloom, 1969; Gagne, 1970), but they lack comprehensiveness (Burns and Brooks, 1970) and are not adequately focused for use in discovering a matchup of cognitive and syntactic structures. We could do worse, I believe, than to glean a taxonomy of cognitive structures from a study of actual discourse, in line with Pitkin's (1978b) efforts; but more about that later.

Let's turn to an example of a single cognitive structure in several syntactic settings. Cause/effect relationships are usually associated with adverbial clauses of causality.

6. We didn't go because the car broke down.

7. Since our paper supply is limited, we'll write on the back of each page.

But there are numerous other syntactic settings that can host the notion of causality.

8. Due to inclement weather, the picnic was cancelled.

9. Badly outnumbered, the reconnaissance squad retreated.

10. People in love do strange things.

11. The school board submitted to pressure by the Citizens Book Committee and fired the librarian.

12. A politician who sees his career in jeopardy is likely to become a demagogue.

(3) Bradwell, a staunch Republican, voted the entire GOP ticket in November.

Notice that only sentences six, seven, and eight contain connectives like because, since, and due to that usually are thought of as signalling cause and effect. In the other sentences, there are no lexical cues. The various embeddings and concatenations reveal causality solely by way of intra-sentence rhetoric. In sentence nine, The squad was badly outnumbered is embedded as a participial phrase in the matrix sentence The reconnaissance squad quickly retreated. In sentence three, Bradwell is a staunch Republican is embedded as an appositive in Bradwell voted the entire GOP ticket. In each of these cases, pragmatic judgments must furnish the notion of causality; and very little ingenuity would be required to create sentences in which absolute phrases, noun clauses, or other structures host cause/effect relationships.

The third question to be considered is the differing cognitive density of similar syntactic structures. The difference might relate to difficult vocabulary items--the meaning of staunch in sentence three, or jeopardy in sentence 12--or to the loading of two or more cognitive structures into the same syntactic structure. For example, the prepositional phrases in sentences 13 and 14 both have comparison as the primary cognitive structure.

13. Seniors, like freshmen, are subject to childish and arbitrary rules.

14. Reformers, like Sisyphus, are doomed to futile and exhausting redundancy.

Sentence 14, though, has an analogical overlay, and a complex one at that. The sentence minimally requires informational understanding of the Sisyphus myth, its application to the evaluative comment about reformers in the main clause, and understanding of words like futile and redundancy. Teachers are all too familiar with the phenomenon of students producing syntactic mazes or endless strings of simple sentences when grappling with literary language or abstruse technical terms. It may be that the reverse of Stosky's formula takes place, as students who are mired in conceptual complexities cannot free themselves for the greater elaboration of syntactic structures they normally command.

Some sentence combining materials appear to have been designed with rudimental attention to readability and appropriate vocabulary. But teachers using SC materials in the field seem to be most aware of the effects of cognitive content on students' ability to manipulate syntax.

I believe that a manageable first step towards bringing SC pedagogy into focus with cognitive processes would be research that compares how writers at different age levels match particular syntactic structures with particular cognitive structures--in terms of the frequency of particular matchups; the range of cognitive structures hosted by each syntactic structure; and the presence or absence of lexical cues. For example, a study of thirteen year olds' and seventeen year olds' written responses to the same assignment might reveal that the seventeen year olds express conditionality more frequently, using a wider range of syntactic structures to do so, but employing fewer lexical cues.

Of course, dozens of decisions would have to be made about how to approach such a research task. But decisions of a similar nature had to be made in, say, establishing the concept of a T-unit and determining its application to

difficult structures like mazes and eliptical utterances.

A problem noted earlier--the lack of a taxonomy of cognitive structures adequate to the task of pairing cognitive and syntactic structures--would also have to be met. But again, the problem seems surmountable. A promising direction is suggested by Pitkin's (1977b) excellent taxonomy of cognitive/syntactic relations. *

Studies of cognitive/syntactic matchups could effect significant changes in SC materials produced for classroom use. Exercises could be constructed around cognitive operations rather than grouped according to syntactic structures. Or more likely, cognitive operations would be the main principle of organization, with the various syntactic settings subgrouped systematically under them. Thus, students might be given an SC exercise to promote greater variety and elasticity in expression of conditionality, beginning with a more commonplace syntactic setting (e.g., an adverb clause with the lexical cue if) and moving on to structures discovered to be less commonly used for hosting conditionality (e.g., absolute phrases like "weather permitting, . . .").

Granted, such exercises would not make SC pedagogy "rhetorical" in the sense of

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*Pitkin (1978) appropriately notes that Pike's schema (1964a, 1964) and Christensen's approaches (1963, 1965, 1968) are helpful mainly in developing materials for brighter, college-level students. Yet the initial applications of his own taxonomy (Pitkin, 1978) appear to have the same limitations, embracing abstract terminology and diagramming of discourse hierarchies.

plugging sentence combining into the composing process. But the exercises would bring manipulation of syntax into direct relationship with thinking skills. Moreover, the exercises would be more discourse-centered, in Pitkin's sense of bringing base clauses together in a manner dictated by particular logical relationships rather than by non-cognitive, syntactic criteria.

In raising questions about the relationship of cognitive and sytactic structures and the present directions of discourse-related research, I'm sure that the approaches I've suggested are themselves fraught with problems. I've tried to recognize some of those problems while noting that sentence-level research and instructional materials are still in need of basic development. No doubt further refinements and counterarguments will emerge as researchers and practitioners continue to exchange ideas on sentence manipulation and cognitive operations..

REFERENCES

Bandler, Richard, and John Grinder. The Structure of Magic, Vol. I. Palo Alto, California: Science and Beharror, 1975.

Burns, Richard and Gary Brooks "Process, Problem Solving, and Curriculum Reform." Educational Technology, 1970, 10, 10-13.

Bloom, Benjamin, et al. Taxonomy of Educational Objectives. New York: McKay, 1969.

Burruel, Jose M., et al. "Transformational Sentence Combining in a Barrio School," in On TESOL, ed. R. Crymes and W. Norris, Washington, D.C.: TESOL, 1974

Christensen, Frances. "A Generative Rhetoric of the Paragraph." College Composition and Communication, 1965, 16, 144-156.

Christensen, Frances. "A Generative Rhetoric of the Sentence." College Composition and Communication, 1963, 14, 155-161.

Christensen, Frances. The Christensen Rhetoric Program. New York: Harper and Row, 1968.

Combs, Warren E. "Further Effects of Sentence-Combining Practice on Writing Ability." Research in the Teaching of English, 1976, 10, 137-149.

Combs, Warren E. "Notes and Comments." Research in the Teaching of English, 1978, 12, 282-283.

Deese, James. "Cognitive Structure and Affect in Language," in Communication and Affect: Language and Thought. New York: Academic Press, 1973.

Fisher, Kenneth David. "An Investigation to Determine if Selected Exercises in Sentence-Combining Can Improve Reading and Writing." Unpublished doctoral disseration, Indiana University, 1973.

Gagne, Robert, Conditions of Learning. New York: Holt, Rehshart and Winston, 1970.

Green, Everest. "An Experimental Study of Sentence-Combining to Improve Written Syntatic Fluency in Fifth Grade Children." Unpublished doctoral dissertation, Northern Illinois University, 1972.

Hunt, Kellogg, and Roy O'Donnell. "An Elementary School Curriculum to Develop Better Writing Skills." United States Office of Education Project No. 8-0903. Tallahassee, Florida, 1970.

King, Martha. "Research in Composition: A Need for a Theory. Research in the Teaching of English, 1978, 12, 193-202.

Maimon, Elaine, and Barbara Nodine. "Measuring Syntactic Growth: Errors and Expectations in Sentence-Combining Practice with College Students." Research in the Teaching of English, 1978, 12, 233-244.

Mellon, J. Transformational Sentence-Combining. Urbana, Illinois: National Council of Teachers of English, 1969.

Miller, Barbara, and James Ney. "The Effect of Systematic Oral Exercises on the Writing of Fourth-Grade Students." Research in the Teaching of English. 1968, 2, 44-61.

Morenberg, Max, et al. "Sentence Combining at the College Level." Research in the Teaching of English, 1978, 12, 245-256

Odell, Lee. "Measuring Changes in Intellectual Processes as One Dimension of Growth in Writing," in Evaluating Writing, Charles Cooper and Lee Odell (ed.), Urbana, Illinois: National Council of Teachers of English, 1977.

O'Hare Frank. Sentence-combining. Urbana, Illinois: National Council of Teachers of English, 1973.

O'Hare, Frank. Sentencecraft. Lexington, Massachusetts: Xerox, 1975.

Pedersen, E. L. Improving Syntactic and Semantic Fluency in the Writing of Language Arts Students Through Extended Practice in Sentence-combining. Unpublished doctoral dissertation, University of Minnesota, 1977.

Perron, J.D. An Exploratory Approach to Extending the Syntactic Development of Fourth Grade Students Through the Use of Sentence-combining Methods. Unpublished doctoral dissertation, Indiana University, 1974.

Pike, Kenneth. "A Linguistic Contribution to Composition." College Compostion and Communication, 1964a, 15, 82-88.

Pike, Kenneth. "Beyond the Sentence." College Composition and Communication, 1964b, 15, 129-135.

Pitkin, Willis. "Discourse blocs." College Composition and Communication, 1969, 20, 138-148.

Pitkin, Willis. "Hierachial Base-Combining." Unpublished paper, 1978.

Pitkin, Willis. "Hierachies and the Discourse Hierarchy." College English, 1977a, 38, 648-659.

Pitkin, Willis, "X/Y: Some Basic Strategies of Discourse Hierarchy." College English, 1977b, 38, 660-672.

Posner, R. "How Semantics and Pragmatics Interact." Paper presented at conference on "The Signifying Animal," University of Illinois, Urbana, June 29, 1978.

San Jose, Christine. "Notes and Comments." Research in the Teaching of English, 1978, 12, 91-92.

Sherwin, J.S. Four Problems in Teaching English: A Critique of Research. Scranton, Pennsylvania: International Textbook Company, 1969.

Stewart, Murray. "Freshman Sentence Combining: A Canadian Project." Research in the Teaching of English, 1978, 12, 257-268.

Stotsky, Sandra. "Sentence-Combining as Curricular Activity: Its Effect on Written Language Development and Reading Comprehension." Research in the Teaching of English, 1975, 9, 30-71.

Strong, William. Sentence-Combining: A Composing Book. New York: Random House, 1973.

Suhor, Charles. "The Fictive Mode as a Higher Performative." Papers in Linguistics, 1975, 8, 365-374.

Suhor, Charles, et al. Guidelines for the English Program in the Middle School and the Junior High School. Curriculum Bulletin 57, New Orleans Public Schools, 1972.

Vitale, M.R. et al. "Effect of Sentence-Combining Exercises upon Several Restricted Written Composition Tasks." Journal of Educational Psychology, 1971, 61, 521-25.